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An update of G.K. Merrill's 1909 "Lichen notes no. 14"

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ABSTRACT—G.K. Merrill proposed three new *Calicium* taxa that have largely been absent from North American lichen literature since their publication in THE BRYOLOGIST in 1909. *Calicium obscurum* [≡ *Chaenotheca obscura*], which colonizes the basidiocarps of *Trichaptum abietinum*, predates the use of *Chaenotheca balsamconensis*. *Calicium minutissimum* was reintroduced as a member of the North American calicioid biota in 1999. *Calicium curtisii* var. *splendidulum* [as "*splendidula*"] is within the range of morphological variation of *Phaeocalicium curtisii* and does not warrant varietal status.

KEY WORDS — *Caliciales*, Maine, pin fungi, stubble lichens

In his Lichen Notes No. 14, G.K. Merrill (1909) described three new *Calicium* taxa: two new species, *C. obscurum* and *C. minutissimum*, and one new variety, *C. curtisii* var. *splendidulum* [as "*splendidula*"]. All three were collected within 30 miles of Penobscot Bay in Knox County, Maine. *Calicium obscurum* was included in Merrill's (1909–13) Lichenes Exsiccati as #92, and *C. curtisii* var. *splendidulum* as #24.

Calicium obscurum G. Merr., Bryologist 12: 107. 1909 FIG. 1A,B
≡ *Chaenotheca obscura* (G. Merr.) Nádv., Stud. Bot. Cech. 5: 123. 1942
= *Chaenotheca balsamconensis* J.L. Allen & McMullin, Bryologist 118: 55. 2015

Calicium obscurum was collected "on dead Polyporei," which we have identified as *Trichaptum abietinum* (Pers. ex J.F. Gmel.) Ryvarden, growing on young pines in Rockland, Maine (FIG. 1A). Two species of algae were reported to be growing with it: *Cystococcus*, better known today as *Trebouxia*, the photobiont of *C. obscurum*, and "a cylindrical articulated form that I am unable to name" (Merrill 1909). This unknown alga is *Stichococcus*, which commonly grows on the surface of *T. abietinum*. Merrill refers to a second *Calicium*, also growing "on a *Polyporus* on Hemlock Spruce," that was collected by Willey (1892) "and identified by Tuckerman as *Calicium trichiale*" [≡ *Chaenotheca trichialis* (Ach.) Th. Fr.]. He wondered if the Willey specimen might prove to represent *C. obscurum*, which differs from *C. trichiale* by its lack of a thallus, two forms of algae, and the absence of pruina.

One species that has been erroneously reported from *Trichaptum* in North America is *Chaenotheca brunneola* (Ach.) Müll. Arg. Tibell (1980, 1999) reported finding it occasionally "on old polypores" in Europe, and Fries (1865) noted a *Trichaptum*-dwelling variant which he named as *Ch. brunneola β cilians* Th. Fr. This variety, which may be the earliest valid name for *Ch. obscura*, has no priority at species rank; moreover, according to Tibell (1981) and Suija & al. (2016, and personal communication), the type material of the variety has not been located. Hutchison (1987, p. 789) erroneously cited *Calicium obscurum* as a synonym of *Ch. brunneola*, and Keissler (1938, p. 597) erroneously cited *Calicium obscurum* as a synonym of *Phaeocalicium polyporaeum*. Keissler stated that Muraschinskij had sent him a specimen collected on *Polystictus pergamenus* (Fr.) Cooke [= *Trichaptum biforme* (Fr.) Ryvarden] from Siberia, "which is identical to *Calicium polyporaeum* Nyl." [≡ *Phaeocalicium polyporaeum* (Nyl.) Tibell] "that is also found in North America under the synonym *Calicium obscurum* Merr." In North America, P. *polyporaeum* is most commonly found on *T. biforme,* while *Ch. obscura* has, to date, been collected only on *T. abietinum*.

According to Selva (2014), four species of calicioid lichens and fungi have been collected on *T. abietinum* in northeastern North America: *Chaenotheca ferruginea* (Turner) Mig., *Ch. trichialis*, *Chaenothecopsis pusiola* (Ach.) Vain., and *Phaeocalicium polyporaeum*. Allen & McMullin (2015) argued that *Ch. ferruginea* is a corticolous and lignicolous species that does not colonize *Trichaptum abietinum*. They proposed the name *Chaenotheca balsamconensis* for the species that Selva (2014) recorded as *Ch. ferruginea* growing on *T. abietinum*. The two species are remarkably similar, but *Ch. balsamconensis* differs in having smooth rather than ornamented to fissured spores, in often having a KOH+ magenta compound in the stalk, and in having a predominantly endosubstratic thallus. After reviewing an isotype of *C. obscurum* (Merrill exsiccati #92 [CANL]), we found it to be

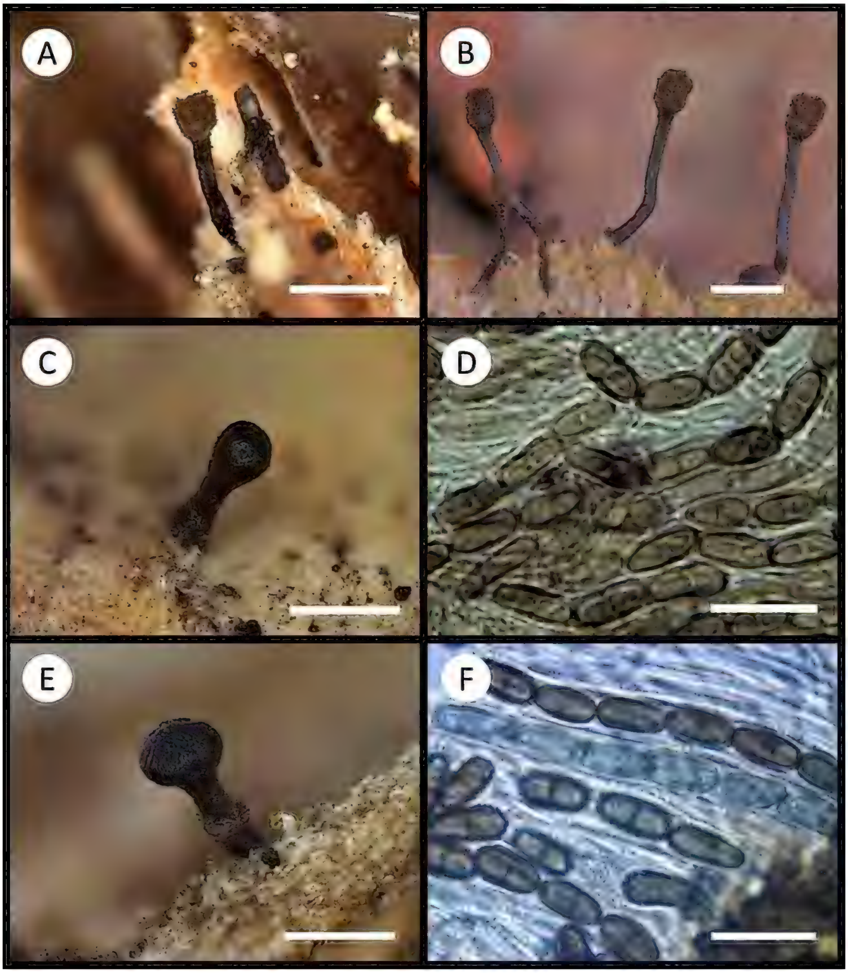

Fig. 1. ***Chaenotheca obscura***: A. Apothecia (*Calicium obscurum* isotype, Merrill exsicc. #92, CANL); B. Apothecia (McMullin 16823, CANL). ***Phaeocalicium curtisii***. C. Apothecia (*Calicium curtisii* var. *splendidulum* isotype, Merrill exsicc. #24, CANL); D. Ascospores (Merrill exsicc. #24, CANL); E. Apothecia (McMullin 14102, CANL); F. Ascospores (McMullin 20101, CANL). Scale bars: A, B = 0.5 mm; C, E = 0.2 mm; D, F = 20 µm

conspecific with *Ch. balsamconensis* (Fig. 1A-B), the chemotype lacking the KOH+ magenta stalk. Since *C. obscurum* is a validly published name for this taxon, it should be resurrected. After its publication by Merrill in 1909, the name has never appeared on any of the North American lichen checklists and seems to have been lost from North American lichen literature. Coincidentally, the same fate befell the two other *Calicium* taxa published in Merrill (1909).

Calicium minutissimum G. Merr., Bryologist 12: 107. 1909

≡ *Phaeocalicium minutissimum* (G. Merr.) Selva, Bryologist 102: 390.

Calicium minutissimum was not recognized as a member of the North American calicioid biota until it was reintroduced by Selva & Tibell (1999). They transferred it to *Phaeocalicium* and, because the type specimen was no longer recognizable, designated a neotype. The original type was first collected by Merrill (1909) on the smooth bark of *Quercus rubra* L. at the summit of Mt. Battie in Camden Hills State Park, Knox County, Maine. The type locality remained the only known location for 90 years until Selva & Tibell (1999) expanded the range to include additional locations in New Brunswick, Maine, New Hampshire, and Vermont. It was later reported from Ontario, Quebec, and Massachusetts by Selva (2010).

Calicium curtisii var. splendidulum G. Merr., Bryologist 12: 107. 1909 [as "*splendidula*"] FIG. 1C–F

= *Calicium curtisii* Tuck., Amer. J. Sci. Arts, Ser. 2, 28: 201. 1859 [var. *curtisii*]

≡ *Phaeocalicium curtisii* (Tuck.) Tibell, Symb. Bot. Upsal. 21(2): 58. 1975

Calicium curtisii var. *splendidulum* was collected on the main stems and larger branches of *Rhus typhina* L. in Rockland, Maine, and on the same substrate in Ottawa, Ontario (Merrill 1909) (FIG. 1C). Tibell (1975) transferred the species to *Phaeocalicium*. The description does not clearly state the characteristics that distinguish *C. curtisii* var. *splendidulum* from the autonomous variety, and the average height of the apothecia and the ascospore measurements fall within those known for the species (FIG. 1C–F). Merrill reported that the ascospores are "simple or indistinctly bilocular;" however, all ascospores observed in an isotype (Merrill exsiccati #24 [CANL]) were clearly 2-celled (FIG. 1D). Merrill also reported that the "capitula are turbinate to subglobose," a character common in young apothecia (FIG. 1C, E). We propose that *C. curtisii* var. *splendidulum* does not significantly differ from *Phaeocalicium curtisii* and does not warrant varietal status. Fink (1935), who also came to a similar conclusion, did not provide any discussion or reason for synonymizing the variety.

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